



Machinery Messages

Case History

New technology = easier torque measurements for operators at LPG pipeline station

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Torque measurements no longer need to be complicated, time-consuming or costly. Using Bently Nevada's TorXimitor®, you can measure torque as easily as you can any other process measurement.

TorXimitor is a noncontacting, strain gage-based torque measuring transducer. It uses a patented technique to transfer torque information from a rotating shaft, under actual machine operating conditions. By using an existing coupling or spool piece, no mechanical modifications or specially-machined spool pieces and spacers are required.

Since the TorXimitor is powered by inductive transmission, its operating temperature range extends to 125°C (257°F). You can install the TorXimitor in hazardous areas, and its small size eases installation. Its inductive power circuit operates well in the dirty or oily environments that are typical of industrial applications.

A separate indicator is not required, as the TorXimitor provides a +1 to +5 Vdc signal to a PLC or data acquisition computer. An optional 3300 Series Torque Indicator is available for dedicated local torque, power and speed indication, peak hold function and machine condition monitoring system interface.

Why measure torque?

A torque measurement enables you to compare actual machine operation to design criteria and to identify a rotating

system's dynamic torque characteristics. Machine performance can be checked under steady-state and transient conditions to ensure it complies with specifications. TorXimitor can be used in test stands, in OEM shops and on-site after machine installation. A larger perspective of machinery management can also be attained. Direct torque or power measurement makes it possible to manage the performance of numerous machines comprising a larger, more complicated and dynamic system.

Typical application

A TorXimitor is installed at a Mid America Pipeline Company (MAPCO) LPG (liquid petroleum gas) pipeline station in west Texas. Mounted between a gas turbine and an LPG pump, the TorXimitor's torque measurement provides a direct indication of the power transferred to the pump.

MAPCO values a *direct* power measurement. Before they installed TorXimitor, it was difficult to assess the machine's performance under different operating conditions. Product flow measurements

aren't generally available, therefore, it was difficult to calculate the amount of power the pump absorbed. Even if the product flow measurements were available, the credibility of process measurements (pressures and temperatures) used to calculate the absorbed power couldn't be consistently or cost-effectively maintained. Variations in product densities also made it difficult to assess the pump's performance.

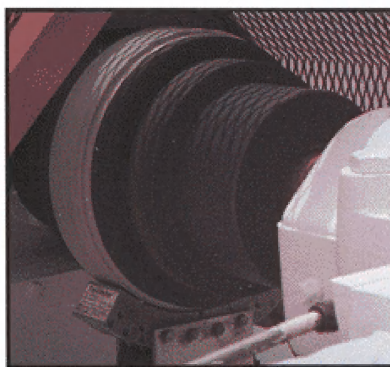
On the gas turbine side of the unit, fuel flow measurements aren't readily available. Empirical methods were used to determine the engine's power output. While simpler to use, these methods rely on potentially erroneous assumptions about the unit's condition when it was previously factory-tested. Ambient conditions also cause variations in expected performance that aren't always easy to reconcile. **The direct torque or power measurement eliminates these uncertainties.**

MAPCO uses TorXimitor to indicate where the gas turbine operates in its load range. In conjunction with other basic process measurements, it helps them assess the unit's condition and helps them determine whether performance deficiencies are originating from problems in the pump or from gas turbine problems.

The TorXimitor measurements play a key role in managing MAPCO's pipeline unit. Their goal is to reduce fuel costs by 10% by only operating the pipeline units necessary to meet demand. MAPCO foresees the TorXimitor as a tool that central pipeline operation personnel can use to run the pipeline more efficiently.

TorXimitor provides valuable machinery data that will enable MAPCO's pipeline operators to make better machinery management decisions. Its low cost and simple application make torque measurement easy to implement, something unheard of in the past. Performance determination no longer needs to be complicated, costly or poorly focused.

For more information on this unique product, contact your nearest Bently Nevada sales representative. ■



TorXimitor installation at MAPCO